

CLAIMS

- [1] A camera module comprising:
a lens portion comprising at least one lens;
5 an imaging element having a light-receiving surface that is substantially perpendicular to an optical axis direction of the lens;
a fixed portion provided on an outer peripheral side of the lens portion;
a first elastic body that is provided on a side opposite to the imaging
10 element side with respect to the lens and couples the lens portion and the fixed portion; and
a second elastic body that is provided on the imaging element side with respect to the lens and couples the lens portion and the fixed portion,
wherein the first elastic body and the second elastic body have the
15 same shape,
the first elastic body and the second elastic body are arranged so as to oppose each other while sharing a common central axis, and
the second elastic body is arranged so that the shape of the second elastic body is different from a shape of the first elastic body projected in the
20 optical axis direction of the lens.
- [2] The camera module according to claim 1, wherein the second elastic body is arranged such that the first elastic body is moved substantially parallel to the optical axis direction of the lens and then is inverted symmetrically with respect to an axis perpendicular to an optical axis of the
25 lens.
- [3] The camera module according to claim 1, wherein the second elastic body is arranged such that the first elastic body is moved substantially parallel to the optical axis direction of the lens and then is rotated about an optical axis of the lens.
- [4] The camera module according to claim 3, wherein each of the first
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elastic body and the second elastic body includes an outer annular portion connected to the fixed portion, an inner annular portion connected to the lens portion, and N (N is an integer of 2 or more) arms connecting the outer annular portion and the inner annular portion, and

- 5 the second elastic body is arranged such that the first elastic body is moved substantially parallel to the optical axis direction of the lens and then is rotated $(180/N)^{\circ}$ substantially about the optical axis of the lens.

[5] The camera module according to claim 1, wherein the lens portion comprises a plurality of lenses,

- 10 each of the first elastic body and the second elastic body includes an outer annular portion connected to the fixed portion, an inner annular portion provided on an inner side of the outer annular portion, and at least one arm connecting the outer annular portion and the inner annular portion, and

- 15 the inner annular portion is supported at a substantially central position of the lens portion.

[6] The camera module according to claim 1, wherein the lens portion comprises a plurality of lenses,

- 20 each of the first elastic body and the second elastic body includes an outer annular portion connected to the fixed portion, an inner annular portion connected to the lens portion, and arms connecting the outer annular portion and the inner annular portion, and

the number of the arms provided in each of the first elastic body and the second elastic body is the same as the number of the lenses.

- 25 [7] The camera module according to claim 1, wherein a coil is provided on the outer peripheral side of the lens portion,

the fixed portion comprises a permanent magnet portion for generating a magnetic field in the coil and a yoke that is formed of a ferromagnetic material and is arranged on an outer peripheral side of the permanent magnet portion; and

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the coil, the permanent magnet portion, and the yoke constitute an actuator for changing a relative position of the lens with respect to the imaging element.

[8] The camera module according to claim 7, wherein the first elastic
5 body and the second elastic body are electrically conductive, and

each of the first elastic body and the second elastic body is connected to the permanent magnet portion via an insulating sheet that is electrically insulating.

[9] The camera module according to claim 7, further comprising:

10 a driving element for supplying electric power to the actuator; and
a controlling element for performing an arithmetic processing with respect to an electric signal from the imaging element,

wherein a distance between the imaging element and the driving element is longer than a distance between the imaging element and the
15 controlling element.

[10] The camera module according to claim 7, wherein the coil is formed by winding a wire around an outer periphery of the lens.

[11] The camera module according to claim 10, wherein the lens has an electrode connected electrically to the coil, and

20 each of the first elastic body and the second elastic body is electrically conductive and is in contact with the electrode.

[12] The camera module according to claim 7, wherein the permanent magnet portion and the coil are arranged inside the yoke and between the first elastic body and the second elastic body.